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Trends in Drug Abuse in the Mid-1980s

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This paper summarizes some of the causes of, and some of the health and social concerns from, the growing illicit drug problem in the 1980s. It suggests that two recent developments, the decentralization of much drug production and modification to chemical laboratories in homes, and the application of increasingly innovative marketing techniques, have brought us to a new and more hazardous era of drug abuse.

The new designer drugs and the new developments in cocaine abuse reveal these to be of major concern to the medical and public health professions, as well as a major worry to the public. In the absence of effective elimination of illegal drugs from the environment, attention must focus on alternative ways to reduce drug abuse. Education regarding the nature of the hazards of these drugs must increase, but there are no simple methods for reducing drug use. We must be prepared to fight growing drug abuse for some time to come.

Much of the world is struggling with an increasing burden of illicit drug production, traffic, and/or use. Heroin and other opium derivatives and marijuana remain popular, although in the U.S. the use of marijuana may be decreasing. Hallucinogens also are fairly common, although LSD, the primary hallucinogen of the 1960s, has become less popular, while other drugs, such as the dissociative anesthetic agent phencyclidine (PCP, or "Angel Dust"), have largely replaced it. "Uppers" (stimulants such as metamphetamine—"Speed") and "downers" (sedatives such as methaqualone—Quaaludes® or Mandrax®) remain in use. Designer drugs, modifications of other drugs prepared in home chemical laboratories, add a worrisome new dimension to the drug problem, and cocaine bids fair to overwhelm all other drugs in terms of the number of users and the severity of its social impact.

This paper argues that the new wave of serious drug abuse, which is a worldwide problem, is partly the result of two recent developments: *(a)* the decentralization of the chemical modification of existing drugs to home chemistry laboratories (for such things as the production of designer opiates and the modification of cocaine hydrochloride to the cocaine freebase), and *(b)* the application of increasingly innovative marketing techniques.

DESIGNER DRUGS

One of the newest drug threats, and one of the most difficult to counteract, is the home chemical modification of basic drugs in order to create new and more powerful drugs. They have a special advantage to the users because, in the U.S., technically they may not be illegal until they are identified, their effects described and evaluated, and, by administrative action, put on Schedule I or II according to the Federal Controlled Substances Act.

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The classic designer drugs have been based on the opiate meperidine (Demerol®) which, although illegal to possess unless prescribed by a physician, is apparently not difficult to obtain for modification. The products of this activity are often called "designer heroins," although "designer opiates" would be a more accurate term, because the modification does not start with heroin. A designer opiate frequently used on the West Coast is 1-methyl-4-phenyl-4-propionoxy-piperidine (MPPP). This drug has a more powerful psychic effect than heroin for a given weight, which makes overdoses likely; they do occur, although with unknown frequency. Unless the chemical manufacture of MPPP is done extremely precisely, however, significant amounts of a dangerous contaminant, 1-methyl-4-phenyl-1,2,5,6-tetrahydro-pyridine (MPTP) will be present. Use of this mixture has resulted in the development of severe parkinsonism in the users, beginning in as short a time as four days following the first use of the drug [1]. MPTP has a useful side effect in that it has given us an animal model for studying parkinsonism, because the clinical and pathological effects on man and on primates are similar, including the rigidity and destruction of cells in the substantia nigra of the brain.

It appears possible that home chemical factories may be able to stay ahead of the legal and administrative process of drug enforcement, unless new approaches to the legal control of these drug modifications are developed. The cost of designer drugs in dollars and human potential is not known, but it may become large.

The approach of designing new drugs from old ones has been known for a long time. The pharmaceutical industry does it all the time, but they must subject the new compounds they create to rigorous safety and efficacy testing before they can be approved by the Food and Drug Administration. In fact, some of the modifications of psychoactive drugs were made by industry: in the 1970s a stimulant called "Speed" (metamphetamine), and, more recently, a variant of Speed called 3,4-methylenedioxy-methamphetamine (MDMA, or "Ecstasy"). At one time Ecstasy was thought to be safer than Speed. Some psychotherapists have recommended using this drug as an aid to therapy, claiming that it lowers the psychic defenses of patients and increases their insight [2]. Others disagree that it has any therapeutic benefit and, in fact, long-term, possibly irreversible effects on the brain have been demonstrated; this process apparently involves a severe reduction of serotonin levels in the brain. Another modification of the basic amphetamine structure is called MDE or "Eve," which is being studied to see if it should be made illegal.

COCAINE FREEBASE

Cocaine is the most rapidly spreading illicit drug in the world, frequently in its smokable or freebase form, which is called "crack" in the U.S., apparently because of the crackling noise made when the cocaine hydrochloride powder is mixed with sodium bicarbonate to make the freebase. The production of cocaine is almost exclusively in South America, mostly in Bolivia, Peru, and Colombia, and has been increasing during the past decade. During this time, these countries also have developed a severe problem of addiction to a cheap, smokable cocaine product known as "coca paste." This substance contains cocaine sulfate, probably mixed with some alkaloid (freebase cocaine) and the kerosene used in its manufacture. Coca paste is mixed with tobacco and smoked, producing rapid addiction with physical effects, such as lung damage, anorexia, malnutrition, and weight loss. The effects of this problem have been described by Jeri [3] and Noya [4].

The first nationwide epidemic produced by the smoking of cocaine freebase in a non-cocaine-producing country was recently described by Jekel et al. [5]. The epidemic occurred within months after a major drop in the street price of cocaine (due to a large increase in the supply from South America), which in turn induced the drug pushers to sell only the freebase (smokable) cocaine on the streets. This form of cocaine is extremely euphoric and rapidly addictive for most people. The development of a cheap and simple method of making the freebase form from the hydrochloride powder, using sodium bicarbonate instead of flammable ether, enabled the modification to be done anywhere, including near the site of distribution. The combined net effect of the new home chemical technique and the new marketing strategy by the pushers was to create a rapidly expanding group of cocaine addicts, who created the increased demand the pushers wanted.

The epidemic became visible in the Bahamas in mid-1983, when suddenly large numbers of cocaine abusers began appearing at medical facilities in the country. There had been cocaine use in the Bahamas for at least a decade before, but most of this apparently was either recreational "snorting" or was intravenous use along with heroin by the small number of heroin users there. The mixture of an "upper" or stimulant drug—here cocaine—and a "downer" or depressant drug—here heroin—is known as a "speedball." The experienced intravenous users seldom appeared in medical clinics, or, if so, their problems were usually ascribed to the heroin. There was a major change in 1983, however, which was shown to have followed by a few months the complete switch to marketing the freebase cocaine by Bahamian pushers. There is little doubt that the combination of the lower cost of the drug and a new, more addictive form of cocaine, which leads quickly to major problems, led to the epidemic described.

The same pattern is now appearing in the U.S., particularly on the East and West Coasts, a pattern which, although apparent before, began in earnest in the fall of 1985. The number of calls about "crack" cocaine to the hot line run by Washton and Gold have markedly increased since 1985 [6]. By the middle of 1986, one-third of the calls concerned this drug. Because of its medical danger and its addictive potential, freebase cocaine is not a drug that is safe for experimentation. Merely experimenting with it leads to addiction in most persons, as well as to an unknown but appreciable risk of rapid death. The medical profession, however, along with most of the world's citizens, has been slow to appreciate the special dangers of freebase cocaine.

PRESCRIPTION DRUGS

The purpose of this paper is not to go deeply into the problem of prescription drugs, but there is abundant evidence of their misuse, particularly of tranquilizers, sedatives, and stimulants. For completeness, however, it is mentioned here to note that we do not minimize the importance of this form of drug abuse.

CAUSES OF ILLICIT DRUG ABUSE

In general, it has been found that the more available and inexpensive these drugs are, the more extensive and intensive will be their use [7]. Ultimately the best way to stop the use of drugs is to make them unavailable. Particularly in the case of cocaine, however, the activity of governments so far has had minimal effect and probably will continue to be ineffectual unless there is a massive destruction of the coca trees in those areas of the world where they grow well.

Even when illicit drugs are freely available, however, not all persons will use them.

The reasons why some persons will and others will not use these drugs are incompletely understood. However, illicit drug use is moving in the direction of increasingly more intense and concentrated experiences, which is consistent with other trends in the industrialized nations. For example, by reference to Table 1, it can be seen that even in something like wheat or sugar consumption, the trend over the past century or more has been toward more refined and concentrated products: from whole-grain wheat to white flour to bleached white flour; from fruits and vegetables society came to prefer the heavy use of refined cane sugar or concentrated sweeteners.

The same refinement and concentration has occurred with drugs. From smoking opium, users have moved to the injection of morphine and heroin to the highly concentrated designer drugs. Cocaine use has moved from the chewing of coca leaves to the more refined cocaine powder and now to the devastating coca paste and cocaine freebase. In each case, the essential ingredients were refined to provide more intensely concentrated experiences. Therefore, one perspective is that a similar international trend is occurring in drug use as in many other ingested products. In general, however, the causes of drug abuse must be seen as complex.

The addictive potential of freebase cocaine must be understood both in terms of physiology and psychological effects. Cocaine blocks the re-uptake of the neurotransmitters dopamine and noradrenaline, which are involved in stimulation of the pleasure centers of the brain. Dopamine accumulates in the neural junctions, and also apparently the dopamine receptors are sensitized to the effects of the dopamine by cocaine [8].

Second, the intensity of the experience of euphoria and the subsequent crash into depression and anhedonia, as well as the likelihood of addiction, are related more to the rapidity of the rise of cocaine in the blood than to the ultimate blood levels achieved [9]. Inhaling the volatile freebase cocaine provides a large absorptive surface area in the lungs, so the "hit" or subjective euphoria begins in 8 to 12 seconds, and the blood level rises rapidly, giving the most intense subjective experience. After an extended period of intense stimulation, the involved neurons become exhausted and a period of depression and anhedonia ensues. During this time, the addict becomes unable to experience enjoyment from previous sources of pleasure, such as food, sex, sunsets, music, or friends, and he or she turns naturally back to the one thing which can still relieve depression and produce pleasure: cocaine. The drug, in effect, blocks the will to resist and becomes strongly self-reinforcing.

Gawin and Kleber found that many cocaine users had DSM-III Axis-I (mood) disorders and appeared to be using cocaine to elevate their mood and relieve

TABLE 1
Progression in Western Patterns of Consumption Toward More Refined and Concentrated Foods and Drugs

Substance	Progression		
Wheat	Whole-grain flour →	White flour →	Bleached white flour
Sweetening	Fruits and vegetables →		Refined cane sugar
Opiates	Smoking of opium →	Injection of morphine and heroin →	Designer heroins
Cocaine	Chewing of coca leaves →	Snorting of cocaine powder →	Smoking of cocaine freebase

depression; that is, they were using cocaine as a kind of antidepressant [10]. That fact is especially interesting because of some similarities of action between cocaine and certain tricyclic antidepressants, such as imapramine and desipramine. These drugs have also been shown to reduce the craving for cocaine, whether or not the user had a previous psychiatric disorder, and even sometimes to block the euphoria if cocaine is used [11]. The majority of users studied by Gawin and Kleber had no prior mood disorder, however, and apparently were using it merely for the euphoria the cocaine produced.

The desire for pleasure or for new and interesting experiences often is a part of the motivation to begin drug use, but psychological reasons are also found. Many of these drugs create briefly the sensation of power, success, attractiveness, potency, or almost anything in which the user feels deficient. An escape into these sensations may be difficult to resist for those who lack a feeling of power and success. Perhaps the feelings of powerlessness against the social "megastructures" of the day contribute to a need to escape through drugs; however, the decision to use illicit drugs has many other precursors.

PRECURSORS TO DRUG ABUSE

Recognizing the complexity of the drug abuse situation, it is more likely that a multiplicity of factors, rather than a single factor, will be found to precede drug abuse in a given individual. Moreover, association does not prove a causal relationship. Nevertheless, numerous experts, including Cohen [12], Bry [13], and others have discussed factors which appear to contribute to drug abuse either singly or together. The following list of factors is adapted from Bry [13].

Poor Parent-Child Relationships

Blum et al. showed that conflict in the family contributes to insecurity in the child and to communication problems between parent and child, increasing the vulnerability to drug abuse [14]. In our experience, unfulfilled parental expectations for children are a heavy burden for the child, creating a huge gap between the child's expected and actual self. The child feels like a failure, becomes depressed, and is open to drugs, which often can make him feel more successful, if only for a short time.

Low Self-Esteem

As reported by Kaplan, individuals with poor self-esteem have decreased ego strengths and a lower threshold for ambiguity, frustration, and dissonance [15]. They experience higher levels of anxiety, passivity, and hopelessness and find it difficult to resist drugs.

Psychological Disturbances

Persons suffering from severe psychiatric illness, e.g. DSM-III, Axis-I diagnoses, such as depression, may seek to relieve their pain through mind-altering drugs [16,10].

Low Academic Motivation

Studies indicate a correlation between low academic motivation and drug abuse [17]. Obviously environmental factors (for example, the lack of a good home situation) and psychological problems (such as attention deficit syndrome) may play a part in

poor school performance. Attention deficit syndrome has been reported in South American coca paste abusers, but whether this is cause or effect is not clear [3,4].

High Experience-Seeking Tendency

In this age, adolescents tend to be programmed to experiencing exciting events. When such events are not available, they may experience a "low." This attitude may be a residual of the 1960s, when feeling "high" was perceived as a positive value and a lack of a high was negative. To the extent that this is true, drugs may provide the desired experiences to fulfill that which is seen as lacking. Zuckerman et al. showed that those adolescents who scored higher on sensation-seeking scales also were more likely to be users of nicotine, alcohol, drugs, and sexual activity [18].

Low Religiosity

Persons with a meaningful internalized religious faith which provides meaning for life appear to be associated with less drug use and abuse [19]. Also, the religious community may provide a sense of support which also helps to reduce drug use.

High Family Substance Abuse

Modelling behavior involving misuse of addictive substances has powerful reinforcing influences on children [20]. Thus, if there is high family substance use, it is more likely to become internalized and acted out by the child. The residual of the prior two decades may be showing an effect here.

High Peer Substance Abuse

Adolescents often are influenced more by their peers than by their parents, and it may be more difficult to say "no" if peers are heavily involved in drug use [21].

High Community Availability of Drugs

When drugs, particularly cocaine, are freely available, this tends to encourage abuse. In the Bahamas the high availability, low cost, and high quality of cocaine of the freebase variety have contributed to the severe epidemic [22].

Poverty and Affluence

The life style of poverty tends to provide a negative emotional state which often leads to drug use [12]. At the other financial extreme, affluence makes a drug addiction easier because of the availability of funds.

According to work done by Bry et al., the potential risk for drug abuse is directly proportional to the number of risk factors involved [13]. It must be emphasized, however, that even in drug-infested areas, some adolescents with multiple risk factors still do not accept drugs. More research is necessary to elucidate the reason for this phenomenon.

NEW DRUG MARKETING METHODS

One of the reasons that the use of freebase cocaine is spreading so fast is that modern marketing methods have been used more than for any previous drug. The switch by pushers in the Bahamas to selling the freebase form of the drug was, in effect, a marketing trial that was a huge success from the pushers' viewpoint and which was soon copied elsewhere.

Another marketing method was to create a prepackaged unit for a more or less standard price and size. This was accomplished by selling standard vials, each containing $5 or $10 of "crack." The scheme was extended when the pushers began offering 10 percent back when the vials were returned, like bringing bottles and cans back to the stores. This tactic helped to bring the users back to the pushers, and the return was often taken in more drug.

The drug itself has markedly increased its own on-the-street sales force, because many of the addicts find they must become pushers in order to make enough money to sustain their own habits. They also can get cocaine at "wholesale" prices in this way. In some cities, young boys become "hawkers" who make the sale on the street, often to people in cars, and then run into a building and obtain the product after taking the order—a modern version of the "car hop"! It has even been reported that, in one area, cocaine was being distributed from a neighborhood ice cream truck.

Another marketing method is the "base house," a fortified and guarded house where users can buy cocaine, have comradeship and protection, and even, if desired, other drugs and/or prostitutes. The lookouts give enough warning if police approach that most of the drugs can be flushed down a toilet, and the remaining drugs found usually are not sufficient to interest a prosecutor [23]. It should be noted that this communal approach to drug use is not new. Opium smoking was often done in "opium dens," and intravenous drug users frequently prefer injecting in communal settings popularly known as "shooting galleries." However, the base houses appear to be new in that frequently protection by armed guards is provided, and the recreation available may include many kinds of drugs (for injection, ingestion, or inhalation) as well as prostitution. Base houses are moving toward becoming "supermarkets" of illegal pleasures.

Still another new element in the Western drug scene is experimentation with increasing numbers of drug mixtures. One recently reported is cocaine and phencyclidine (PCP, or "Angel Dust"), which is called "space basing" [24]. This mixture apparently produces wild behavior and paranoia.

CONCLUSION

The worldwide increase in drug use appears to be due to a complex series of forces that will not be easily changed. In the presence of cheap, easily accessible, home-modified illicit drugs, public "control" efforts probably will be of limited value, even though we must try to find those approaches with the best chance of being successful. Ultimately people will have to address those deeper social, psychological, and spiritual issues that make illicit and other drugs attractive. In the meantime, it is critical to enable as many persons as possible to know the true consequences of embarking on the use of illicit drugs, and the medical profession must play a much larger role than it is currently doing.

The nature of the consequences of illicit drug use, which recently has been most visible in cocaine users, was described eloquently by the American poet, Emily Dickinson, in a poem undoubtedly referring to other experiences, but which echoes with uncanny accuracy the drug experience today:

For each ecstatic instant
We must an anguish pay
In keen and quivering ratio
To the ecstasy.

For each beloved hour
Sharp pittances of years
Bitter contested farthings
And coffers heaped with tears [25].

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